

The Dollar \$ign Its Written and Printed Origins

Eric P. Newman

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The written English language is and has been read from left to right just as have other European languages. Hebrew, Arabic and some other Asian languages are and have customarily been read from right to left. An exception in the English language is the \$ sign as accompanied by one or more numerals to its right. For example, in reading \$6 the number is read first and the monetary symbol thereafter, so that such an amount is read from right to left instead of from left to right. This order of reading is and has for many centuries been used with respect to the symbol £ for the English monetary pound. Other countries have also followed such a practice of reading their own monetary symbols after the numerals even though numerals are placed to the right of their symbols. This practice is complicated theoretically in left to right reading when more than one numeral is used in a number because such a number is first read from left to right before the monetary symbol on the left of the numerals is added. The human mind easily adjusts to these conditions without the eyes changing direction.¹

The practice of writing in a manner to cause this exception developed as a matter of convenience and practicality in written money records and in calculations as will be more obvious from examples included in this study.

The uncertainty as to the origin of the conventional \$ sign was pointed out in the fourth edition (1859) of *Webster's Unabridged Dictionary*. Curiosity continued to develop and in 1865 an instructional monetary treatise by Wilber and Eastman was published as a promotion for the successful Eastman Commercial College and pointed out the then existing controversy.² For more than a century thereafter theories and explanations abounded.

The theories included:

1. The letters U.S. for United States or Uncle Sam were combined in ligature and the bottom loop to the U abandoned.
2. The letters ps or Ps as the Spanish abbreviation of pesos were superimposed on one another and the top loop of the p or P abandoned.
3. The first and last letters of the Spanish word "fuertes" (meaning hard money or specie coin) were combined in ligature.
4. The Spanish symbol for the 8 reales coin or piece of 8 was written as 8 or l8l or 8-8 or 8ll8 or p8 and combined in ligature.
5. The Straits of Gibraltar, known as the Pillars of Hercules, were represented by two upright columns in various forms on Spanish and Spanish American coinage with a ribbon or scroll draped across the uprights and these were combined in ligature.

6. The two upright columns representing the Pillars of Hercules on Spanish and Spanish American coinage were combined in ligature with an S for the English spelling of Spain or Spanish.
7. The denomination of 2½ asses (a sestertius) on some Roman Republican coinage, written IIS (textually 1-1 S), was combined in ligature.
8. The religious motto "In Hoc Signo" was often abbreviated I H S and combined in ligature, the \$ sign being a reworking of it.
9. In Spanish American coinage from the Columbian Mint at San Luis Potosi the mint mark of SLP in ligature was reworked and adapted.
10. The Portuguese symbol for cifrao (phonetically cifron) meaning thousand was copied.
11. The first and last letters of the Portuguese word Milhores (thousands) were combined in ligature.
12. The symbol & for pound sterling was adapted and changed into an S for Spanish superimposed with a vertical line or lines instead of a horizontal line or lines as in the & symbol.
13. The letters Ds or DS as an abbreviation for dollars were superimposed on one another and reworked.
14. A variety of Chinese hollow handle spade bronze coinage from about 350 B.C. contains a mirror image \$ sign which is read Mi chin. Henry Ramsden humorously suggested it as a source.

The present summary of a century of prior historical research on the \$ sign, supplemented with additional findings and thoughts may therefore be welcome.

The Need for a Symbol

The Spanish and Spanish American silver coins known as pieces of 8 reales (reales) were customarily referred to in commercial transactions in eighteenth century America, when the English language was used, as the dollar, the Spanish dollar, the Spanish milled dollar, the Spanish American dollar, the Peru dollar, the Mexican dollar, the silver dollar, the cross dollar, the pillar dollar, the bust dollar, etc. For Spanish speaking people such coins were called the peso or peso duro. For French speaking people those coins were referred to as the piastre, a term of Italian origin. Technically there were some design, weight and fineness variations in the coins from time to time but the varied expressions describing them were internationally understood by the commercial world and by the American public.

Money calculations are usually performed in one's native language,

whether written, spoken, or only mental. An abbreviation or symbol for such a monetary unit simplifies the writing of the unit for everyone regardless of language, just as is true as to the written use of numbers or numerals. To have a common symbol for a monetary unit which everyone might use in writing was a great advantage in bookkeeping, communication and commercial transactions regardless of the language a person used to refer to that monetary unit. Thus it would be a convenience for British colonists in America doing business in Spanish, French or English speaking regions to have a practical symbol for the primary coin used in payments and trading transactions. The Spanish were using ps, pS, Ps and PS as abbreviations for pesos, customarily written with flourishes and rubrica and often involving more than one horizontal level of writing. These abbreviations consisted of two letters of the alphabet and were written in script or capitals in both upper and lower case. To use any form of ps as a symbol for the English word dollar was somewhat confusing and cumbersome. Calculations needed a monetary symbol like the British £ (libra) which was entirely distinctive and did not have to be repeated when extensively used. A symbol had to avoid interference with addition, subtraction, multiplication and division as well as not blocking columnization or extension. It had to be different from all numerals and lettering and be able to be placed close to them. The abbreviation in English of d or D for dollar had been used occasionally but was not distinctive because it could be confused with d, the common abbreviation for English pence (denarius) or American money of account pence. Combinations like dl, ds, dls, dol, dols, dolls and dollrs were used but consisted of lettering and were not brief enough. Even Thomas Jefferson who enjoyed adopting new concepts wrote D with a horizontal line through it during his lifetime as his choice for a distinct symbol for dollar, obviously having been influenced by the horizontal line or lines used in the British monetary symbol £. Neither he nor his contemporaries seem to have commented upon the use of the \$ sign even though some of them used it.









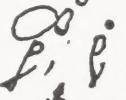

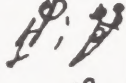
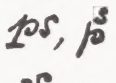

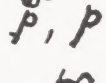
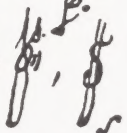













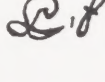

In the eastern portion of the English Colonies in North America prior to the American Revolution, there was no critical need to have a practical symbol to refer to the dollar because it was not a primary or official monetary unit except to some extent in Maryland beginning in 1767. Even though the dollar was a commonly used expression for a Spanish or Spanish American peso as a trade coin and as a standard of exchange value it was not the basic unit for American prices and bookkeeping. The decimal system as to amounts less than one dollar was not then used. During the American Revolution the

Continental Congress and the independent states spread the use of the dollar as a bookkeeping unit by issuing paper money in dollar denominations to try to create economic uniformity and stability. In 1782, after the end of military action, Gouverneur Morris, through Robert Morris, recommended a dollar of 1440 mills as a basis for money of account for all states with a new 1000 mill Federal coin of proportionately lower value as the largest silver coin.³ Thomas Jefferson and others felt this to be impractical. The United States on July 6, 1785, adopted the dollar both as a monetary standard and as the largest silver coin, the cent becoming the dollar's basic decimal subdivision. Thus the broader need to use a distinctive symbol for the dollar became even more essential because of the official federal abandonment of all money of account systems in coinage plans. Such a symbol, the \$ sign, was already developed and in use by English speaking merchants along the northern coast of the Gulf of Mexico but minimally elsewhere in the United States. Since habits of people in writing and bookkeeping are particularly slow to change, the acceptance and use of the \$ sign had a gradual metamorphosis in the United States thereafter.

The \$ Sign Discoveries by Cajori

Florian Cajori (1858-1930), a professor of mathematics, physics and engineering who taught at Tulane University, The Colorado College and the University of California (Berkeley), is responsible for initiating and vigorously continuing a factual study of the history of the \$ sign. Prior to his research the many theories which abounded had no probative support. In a 1912 article, Cajori published an assembly of peso or dollar marks from the sixteenth through the eighteenth centuries from various parts of the world (fig. 1).⁴ He showed in a chart that the abbreviation for the plural of pesos was written in various ways and that the s in the abbreviation ps was often at a level above the p. He also pointed out that the handwriting of the abbreviation ps often was done in one stroke of the pen and that a capital P was not customary. He noticed that in Mexico until after independence from Spain in 1821 the Mexicans continued to use the abbreviation ps for pesos as they had done in the eighteenth century.

He concluded that the \$ sign was developed about 1775 in North America by English speaking Americans who were in business contact with Spanish speaking Americans and that the earliest known written use of the \$ sign was by Oliver Pollock of New Orleans in an August 29, 1778 letter to George Rogers Clark. He also stated that the first printed use of the \$ sign was in Chauncey Lee's

<i>Place of MS.</i>	<i>Date of MS.</i>		<i>Date of MS.</i>	<i>Place of MS.</i>
Spain	abt. 1500			1598 - Mexico City
Mexico (?)	1601			1633 San Felipe de puerto
Mexico	1644			1649 Mexico City
Manila	1672			1696 Mexico
Mexico	1718			1746 Mexico City
Chietla (Mexico)	1748			1766 Manila
Mexico	1768			1769 ?
New Orleans	1778			(1778) 1783 New Orleans
Mexico City	1781			1786 New Orleans
On the Mississippi	1787			1787 Mexico City
Philadelphia	1792			1793 "Nouvelle Madrid" (N. O.)
"Nouvelle Madrid" (N. O.)	1794			1794 "Nouvelle Madrid" (N. O.)
"Nouvelle Madrid" (N. O.)	1794			1794 "Nouvelle Madrid" (N. O.)
New Orleans	1796			1796 Philadelphia (?)
New Orleans	1796			1799 Louisville (?)

American Accountant published in 1797.⁵

Cajori's article attracted customary challenges, corrections and new data which he was prompt to report.⁶ Cajori detailed data provided by August H. Fiske from the diary of Ezra L'Hommedieu, an attorney of Southhold, New York, who was a deputy from Suffolk County to the Provincial Assembly of New York (after July 9, 1776, Convention of Representatives of the State of New York) and attended meetings at Poughkeepsie, White Plains, and Fishkill from June 10 to December 5, 1776.

L'Hommedieu's entries include items in pounds and shillings (New York money of account rather than sterling) and dollars. Dollar amounts are spelled out until August 21, 1776, when there appears "Treasurer to advance Captain Wismer \$580 for bounty." On August 24, 1776, there is a reversion to "Hugh Doyle is to receive 8 dollars." Then on August 28, 1776, "the treasurer is to advance \$10 for removing military stores from New York" is entered. Then follow many uses of the \$ sign. Up to October 31, 1776, a single stroke crosses the S while thereafter two strokes are used. These entries moved the earliest use of the \$ sign to 1776 and geographically distant from Spanish speaking areas (fig. 2).

Aug. 21

Aug. 28

Oct. 2

Oct. 31



2

1776

In a 1925 article, Cajori corrects himself about the first \$ sign in print being in Chauncey Lee's 1797 publication.⁷ He emphasizes the differences in Lee's symbols from the conventional version already in use before 1797 and assumes that Lee knew what was then in use. Cajori is thus the first to emphasize that Lee's symbols are unrelated to the conventional \$ sign, but he does not consider the probability that Lee could have been entirely unfamiliar with the conventional \$ sign. Lee's publication will be detailed subsequently herein.

In 1929, Cajori again updated his research,⁸ presenting a slave sale document in Spanish from Puerto Rico, dated April 1, 1778, in which the amount of 478 pesos, 5 reales, 16 maravedis is writ-

ten as "quatrociemos sesenta y ocho ps \$ cinco rrs y diez & siete mrv" (fig. 3).

un Negro Mulecon, y una Negra Muleco-
na, en precio de quatrociemos sesenta y
ocho p. \$ cinco rrs y diez y siete mrv, los
que ha recibido el Factor D.ⁿ Pedro de
Larrea.

3

This item shows the \$ sign being used as a repetition of ps for plural purposes and follows it with a double r for pluralizing the abbreviation for reales. Cajori repeats his prior findings and reconfirms them. When Florian Cajori died in 1930 he had passed forward a heritage of accurate information on the \$ sign which others might build upon.

The John Fitzpatrick Letterbooks

By the secret Treaty of Fontainebleau on November 3, 1762 (the formal Treaty of Paris was signed February 10, 1763), the Louisiana Territory on the west side of the Mississippi River and the area surrounding New Orleans on the east side was transferred from France to Spain, while the balance of the French territory on the east side of the Mississippi River was added to the English colonies in America. The Spanish also yielded East and West Florida to the English. The English obtained non-exclusive navigation rights on the entire Mississippi River. The news of the Treaty did not reach New Orleans until September 1764. Naturally the French then lost interest in the administration of the Louisiana Territory area and left it to the Spanish to redeem the outstanding French paper money obligations there. American colonial traders, many from the Atlantic seaboard, promptly moved to New Orleans in the new Spanish Territory and to Florida Gulf of Mexico ports in the new English territory to take advantage of the slack in commercial activity due to the changes in ownership. A few established themselves upstream on the rivers on which furs were shipped. The Spanish were slow to take over administration of the Louisiana Territory and in 1766 sent Antoine de Ulloa to New Orleans as Governor without adequate support or supplies. He retained many French officials and was ejected in the

local revolt of 1768. In August 1769, however, Spain sent in Alejandro O'Reilly as Governor with adequate military and economic backing to enforce Spanish control.

Under the prior French administration of the Louisiana Territory the livre was used as the basic unit of money of account in commerce. The livre and its fractions were not represented by any French specie coin but by deerskin and other skins as commodities and by balances on account books of merchants and traders. There was also paper money consisting of card money, treasury notes, promissory notes, certificates of credit and bons. In view of intermittent French colonial inflation and fluctuations in the value of skins there were customary negotiated conversion rates of the livre into the piastre (the dollar or peso).

By 1769 the English traders who had moved into the Gulf areas were dominating the exports and imports, primarily using the peso in the Louisiana Territory area as the unit of monetary value in place of the French livre. Thus the livre as a money of account began a lingering phase-out in the Mississippi Valley and the peso solidified itself there both as a specie coin and as the monetary unit for book-keeping purposes. West Florida being formerly Spanish territory routinely continued its peso usage. The English colonies on the North American Atlantic coast were primarily using and continued to use pounds, shillings and pence as their several moneys of account with various exchange value ratios to the peso or Spanish dollar. During the American Revolution, the Continental Currency of the United Colonies (United States after July 1776) and the paper money of some of the independent American States selected the "Spanish dollar" as their monetary unit for paper money and to some extent their money of account practices even though there were few Spanish silver dollars in circulation.

Governor O'Reilly recognized the domination of trade and the smuggling practices of the English colonists operating their trading establishments in New Orleans and promptly ordered them to leave the Spanish area on September 2, 1769. Many of them moved to Mobile, Pensacola and inland locations in British owned West Florida and continued their trade. This greatly increased the use of a special route to transport merchandise up and down most of the Mississippi River without passing by New Orleans where inspection and fees were imposed by the Spanish. There was a way to leave the Mississippi River at Bayou Manchac (then also known as the Iberville River) 8 miles south of Baton Rouge, continue eastwardly along Bayou Manchac to the Amite River, and then proceed southerly through Lake Maurepas and Lake Ponchartrain into the Gulf of Mex-

ico. This route was a bypass from all of the Mississippi River Valley slightly north of New Orleans to the Gulf of Mexico, the bypass being entirely under British jurisdiction at that time.

One of the expelled English colonists was John Fitzpatrick. He was born in Waterford, Ireland in 1737. He served three and a half years as an English colonial ranger under Robert Rogers during the French and Indian War. In 1762 he was a trader in the Illinois area working for Oakes & Goddard. He was captured by native Americans but escaped. In 1764 he visited Mobile in West Florida, returning to Illinois in 1765. When he moved to New Orleans is not certain but he was well established there by 1768. When he was ordered to leave in 1769, he tried to liquidate his assets and pay his debts, but left for Mobile on September 21, 1769, before that could be accomplished. He arranged to open a store on high ground at Manchac (Fort Bute) at the juncture of Bayou Manchac and the Mississippi River and moved there by February 15, 1770. His friend Isaac Monsanto who was also expelled from New Orleans already had opened a store in Manchac. Fitzpatrick lived in Manchac during the Revolutionary War and the subsequent Spanish occupation until his death on March 20, 1791. His wife survived until 1797 and all their assets were sold to pay debts—all except an unsalable chest of papers and records containing his business letterbooks which have turned out to be the major resource for the history of the \$ sign.

There are almost 1,000 commercial letters copied by Fitzpatrick and his clerks into the letterbooks. They are written at New Orleans from June 13, 1768 through September 21, 1769, at Mobile from November 7, 1769 through December 12, 1769, and at Manchac from February 15, 1770 through May 21, 1790. Most of the letters are to merchants in Pensacola, Mobile, New Orleans and Natchez. Some are to traders in towns along the Mississippi River and its tributaries. They are replete with prices, accounts due, accounts receivable, exchange matters, note obligations, expenses, calculations and other money matters. They are almost all in English (a few in French), full of spelling and grammatical errors, colloquial expressions and with Spanish, English, French and American monetary abbreviations and symbols galore. Florian Cajori was unaware of the existence of the letterbooks.

In 1978 Margaret Fisher Dalrymple completed a study of the Fitzpatrick letterbooks and the text of each letter was published by the Louisiana State University Press along with her historical introduction, glossary, etc.⁹ Given that the condition of the letterbooks was mediocre, her ability to decipher crudely penned backwoods English was outstanding. She included symbols and abbreviations as writ-

ten, unveiling the amazing facility of her hard working merchant pauper to demonstrate the convenience and practicality of the \$ sign and his part in developing it as early as June 30, 1768 (fig. 4).

\$1200 / \$250.

Aug. 1768

\$28 \$25.

Sept. 28, 1768

\$187.9 1/2

Apr. 13, 1769

\$260.7 3/4

May 17, 1769

\$276.7

May 11, 1769

\$101.28 1/2

June 4, 1770

\$159.44

Oct. 20, 1772

2242 1/2

Dec. 6, 1776

4

The use of the \$ sign in early manuscript communications is complicated by the fact that often the only known written text is not necessarily written by the signer of the letter or by the preparer of a retained copy in a letterbook or otherwise. The scribe or secretary sometimes wrote the letter and it was then signed by the principal. On other occasions the principal wrote and signed the entire letter and the scribe or secretary prepared necessary duplicates which were sent in case of loss of the original or which were for retention or both. It seems reasonable to presume that duplicates or copies

prepared by scribes customarily repeated the symbols as originally written because any changes might be considered inaccurate and subject to criticism. The important fact is that both sender and receiver of a communication understood the symbols which were used. The \$ sign would not have been used by the sender if the receiver would not have fully understood it. As its convenience was recognized it was used more and more by senders and spread to others who at first were reluctant to use it.

In the Fitzpatrick letterbooks most of the copies of the letters are in Fitzpatrick's own hand, an indication that he also wrote those original letters.

From the beginning of the letterbooks in 1768, Fitzpatrick uses a special symbol for dollars which is not "pS". It is used over 1,000 times in his letterbooks. It is created with one continuous stroke going downward obliquely to the left, then continuing upwardly for an equal distance near the left side of the downstroke and finally obliquely downward to the right in a reversing curve across the other two parts of the symbol. The lower portions of p in pS are evident in the first downward and upward portions of the stroke. The final part of the stroke is an S curve. There is no trace of the top loop of the p. The S curve is superimposed on the two other portions of the stroke.

There has been nothing located prior to 1776 to compare with these symbols. They could not have been related to U S because there was no United States at that time. The joinder at the bottom of the first two parts of the symbol dismisses any relationship to the parallel Pillars of Hercules on the coinage. All uses by Fitzpatrick of his special symbol were to represent the dollar. The convenience and clarity of the form of this symbol is obvious. The fact that the top loop of the p is omitted might not by itself be considered by some as sufficient to make the Fitzpatrick symbol distinctive, but the superimposition of the S over the two lower portions of the p is the major additional change of form. Fitzpatrick never had to explain the meaning of his symbols to anyone in his correspondence and his addressees clearly understood what he was using. Whether he learned from others the symbol he used or vice versa does not detract from his own extensive use of it.

Symbols and abbreviations for dollars and pesos are often used interchangeably in the letterbooks with a lack of uniformity in placement relative to the numerals indicating the amount. In a Fitzpatrick letter written July 17, 1769, from New Orleans to a merchant at Mobile "71½ Ds," "\$164.6½," and "Ds 401:4" are all written in the first paragraph. In another letter to Pensacola on the same date

the abbreviation "ps" has two different meanings when sail cloth "was charged 5 ps per yard which is \$ 15 Ds per ps," with "ps" first used meaning dollars and then meaning piece. The plural of pieces is sometimes abbreviated in the letterbooks as "pss" to distinguish it from money.

On May 9, 1771, a letter from Manchac to Pensacola again has different symbols with the same meaning in the same sentence when Fitzpatrick writes "Amounts to ps 337.2r of which there is for you \$137.2r and the other \$200 for Mr. John Stephensons Accot." On November 9, 1771, a Fitzpatrick letter from Manchac to Mobile includes "\$24 Ds."

In a July 19, 1772 Fitzpatrick letter, a price was described as "some at 8½ \$ and Others at 9 Dollers." In another letter dated October 7, 1773, an amount is written as "\$ 5 Dollers," showing the same monetary standard on each side of the numerals, but in different form. In a May 17, 1769 Fitzpatrick letter written from New Orleans to a Pensacola merchant, it is stated that "It will be 1½ Dollar for the Corn and Barrel here if shipped in this place, and if obliged to send it to the Bayoux will stand you in \$1 - 6. Exclusive of freight." On October 20, 1772, "\$159.1½" and "Ds 159.6½r" are both used referring to the same group of merchandise.

While the amount of reals is often indicated only with punctuation following dollar amounts, sometimes both dollars and reals are specifically designated with variations such as a redundancy in February 1771, using "\$ 128.4½rs In hard Dollers" and a partial use of symbols in "383 Dollers 1½rs" on July 19, 1772.

In addition to what is heretofore shown, the \$ sign occasionally follows an amount in the manner spoken, such as "35 \$" on September 28, 1768, "8½ \$" on July 19, 1772, "2242 \$" on December 6, 1776, and "2 \$" and "1 \$" on July 8, 1777.

Fitzpatrick's facility in using seven different money symbols and abbreviations is demonstrated in a November 21, 1776 letter from Manchac to Baton Rouge in which he calculated the exchange value of 6 pounds, 5 shillings, 4 pence in English Sterling into dollars and reals at the rate of 4 shillings, 8 pence Sterling per dollar. It may also be observed how similar his abbreviation for "per" is to the common use of "ps" as a symbol for "pesos" (fig. 5).

Those whose native language was Spanish had remained satisfied in the eighteenth century with the abbreviation ps or pS for peso but for convenience in foreign trade sometimes used the \$ sign as well. Just as in the 1778 Puerto Rican slave sale document previously illustrated, there is a May 4, 1778 letter written by a scribe from Spanish Governor Estevan Miro at New Orleans to Thomas McKean

\$ 6..5..4

£ 6..5(s) ..(d)

Exchange at 4/8 St pr \$

Exchange at
4s8d St pr \$

--- is \$26..7

is \$26..7r

5


in Philadelphia with an amount written in numerals followed by a repetition of the same double symbol. It is "30355 pS \$" and has the capital S in pS in script rather than in Roman style (fig. 6).

suministrando a los Agentes
la suma de 30.355 p. \$ tres
habitanos de esta Provincia; pero

6

This also conforms to the custom in the Spanish language of repeating abbreviations to designate plurals. The abbreviations E.E.U.U. for Estados Unidos (United States), F.F.C.C. for Ferrocarriles (Railroads) and F.F.A.A. for Fuerzas Armadas (Armed Forces) are examples. Thus the duplication of the monetary symbols in the above examples may have been a means of indicating the plural, even though the S in the peso abbreviation and the S in the \$ sign both originally indicated the plural form.

After Mexican Independence the occasional use of the \$ sign for the Mexican peso began within Mexico as shown by a document for "cinco mil pesos" dated October 1, 1822, with a clearly written conventional \$ sign (fig. 7).

<i>Pral</i> <i>m^{ca} R.</i> <i>son 5.000 \$</i>		<i>a Julian Neg.</i> <i>peas en pie</i> <i>marcad. como al mdrgen,</i> <i>para satisfaccion. para lleva</i> <i>y entregarlo e.</i> <i>Lega del Com.</i>
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7

Differences in Value of Reals (Reales)

Some of the Fitzpatrick letters to merchants in Mobile and Pensacola in West Florida show that 10 reals were equal to one dollar in that region as well as in New Orleans instead of 8 reals to one dollar used by Fitzpatrick when he was in Manchac. This differential had arisen due to the minting in Iberian Spain, beginning in 1707, of a debased 2 real coinage and its fractions having about 20% less silver than prior coinage while generally retaining the same size by adulteration. The debased 2 real coin was called a "pistareen" but retained the 2 real denomination in its legend for many years thereafter. No such reduction in silver content took place in coinage in Spanish American mints. Much of the debased 2 real coinage naturally came to America replacing some of the full weight 2 real and other denominations in circulation. When this intrinsic value deficiency became a problem, American merchants had a choice of pricing less expensive items in reals at the rate of 8 to the dollar or adjusting prices to a 10 reals to the dollar basis. It depended upon whether pistareens were being accepted at their face value of 2 reals in small transactions or at a 20% discounted value. Some regions used one practice and some the other. This had the effect of complicating addition and multiplication for merchants doing business in regions using different money of account valuations. Once the dollar or peso total had been arrived at on either basis any payment in coin required discounting of only pistareens from their full value. The Fitzpatrick letterbooks elucidate the real to the dollar practice. For example "\$881.8½ r" is written in a June 30, 1768 letter from New Orleans; "\$187.9¼" is written in an April 13, 1769 letter from New Orleans; and "\$260.8¼ rs" in a June 4, 1770 letter from Mobile. No letters have portions of a dollar written as 10 or more.

Totals with portions of a dollar exceeding 8 reals indicate the use of a 10 real ratio to the dollar. In letters sent from Manchac to Peter Swanson in Mobile dated May 31, 1770, and to Thomas Walters in Pensacola dated October 4, 1777, Fitzpatrick uses the expression "your money" to refer to a 10 reals to the dollar basis.

In a letter to John Ritson in Pensacola dated May 11, 1770, a calculation on the basis of 10 reals to the dollar is as follows with an unusual spelling of doubloons:

His honor. Elias Dunfords note for		\$ 118.7 r	
Leut. Wm. Featherstons note		158.	
			\$ 276.7 r
in Gold	11 Double Louns at \$16	176.	
	5 half Joes at 8½	42.5 r	
	a light pistole	3.6 1/4	
	In Silver	1.1 3/4	
			223.3
			\$ 500.

In a letter from Manchac to Mobile dated August 30, 1770, Fitzpatrick, using the word bit meaning real, stated as to shelled corn per barrel "I can have delivered me here at 10 bits this currency say 12½ bits your money ..." showing the differential in value of reals in the two regions. If a cash payment was made in a 10 real to the dollar region, full weight Spanish American 2 real coins should have been received at 4 to the dollar, but may sometimes have been improperly credited to a customer only at the rate of 5 pistareens to the dollar.

Oliver Pollock's Participation

In a five page invoice concerning many types of merchandise shipped from New Orleans on April 1, 1778, on board *Bateau La Providence*, by Oliver Pollock and consigned to Robert Morris, William Smith and Henry Laurens (the United States Secret Committee to Charter Vessels and Transport) "on Account & Risque of the United Independent States of America" in Philadelphia, there are two distinct positions in which the \$ sign is placed.¹⁰ The invoice is in English in the handwriting of a clerk and signed by Oliver Pollock personally. Data for each type of item included in each container is listed in a separate horizontal line as was customary. The number of pieces was entered first, then a description of the item, next the unit price of the item, followed by the aggregate charge for all of

the same items. To the left of each unit price is the symbol a or @ for at. The unit price is in dollars except that if the unit price is less than a full dollar the price is listed in reals. The reals are abbreviated with r or R to the right of the numerals constituting the price in reals and the dollars are symbolized by a \$ sign to the right of the numerals for the price in dollars. The subtotal of aggregate charges for the content of each container is set out in a line further to the right and a page total is at the bottom of those subtotals. The page total is carried forward to the top of the following page. Each page total and each carry forward total has a \$ sign to the left of the numerals and punctuation at the end of the full amount of dollars. If a portion of a dollar results, that portion is entered in reals without further designation. The invoice contains 73 of the conventional \$ signs.

The placement of the \$ sign on the right side of numerals used for pricing and on the left side of numerals used for totals shows practicality as the motivation for so doing. The customary use of r or R for reals on the right side of a unit price when reals were the basis for that price avoided interference or confusion with the a or @. The \$ was similarly placed on the right side of a price when price was equal to or exceeded one dollar. When totals were calculated the result was always in dollars and the \$ sign was placed on the left side of the numerals to avoid confusion with a dollar amount which in many instances included a fractional part of a dollar expressed in reals. Since Spanish American silver coins in circulation had denominations only in reals (1/8th dollar per real for full weight pieces), punctuation was used to separate the whole dollar amounts from the reals in a total. Maravedis as a subdivision of reals were too insignificant to include but the occasional use of additional punctuation shows that the clerk had been accustomed to using maravedis.

Typical selected entries from the invoice follow with our parenthetical explanatory additions:

Amount Brought over		\$ 4506..6.. ..
A trunk containing Vizs	(unit prices)	(line aggregate)
49 pieces Britannia	a 18 Rs	110..2.. ..
4 doz & 4 check shirt	a 18 \$	78..
2 pieces Corde	a 16 \$	32..
1 piece diaper		30..
1 doz pair mens thread hose		9..
Hair trunk & corde		4..
(Container subtotal)		263..2.. ..
(Typical page total)	Carried over	\$5629.2½

On July 6, 1778, Pollock wrote a letter from New Orleans to the Committee of Congress in Philadelphia containing a problem in the settlement of a Revolutionary War claim due from the United States as prize money for the capture of the British ship *Rebecca*. Pollock had offered the crew "\$4750" and the crew insisted upon "ps 5500" (fig. 8).

that the Ship Rebecca is
\$4750 which Valuates

second time which by
is now for 5500 I have

The use of different symbols for the same matter may seem unusual, but it is similar to a Fitzpatrick letter dated May 9, 1771. The original Pollock letter is lost but is known from a copy made by a Philadelphia scribe on October 11, 1782, when such papers were forwarded to Congress.

In another portion of the copy of that July 6, 1778 letter the \$ sign follows the numerals (fig. 9). In the Philadelphia scribe's copy

red with 130\$ / I have four
Merchants, who were establish 9

of an August 11, 1778 letter from Pollock to the Committee the \$ sign is used in front of the numerals on several occasions (fig. 10).

Paltries, the whole of the Property
amounting to £ 14. 455. 0%

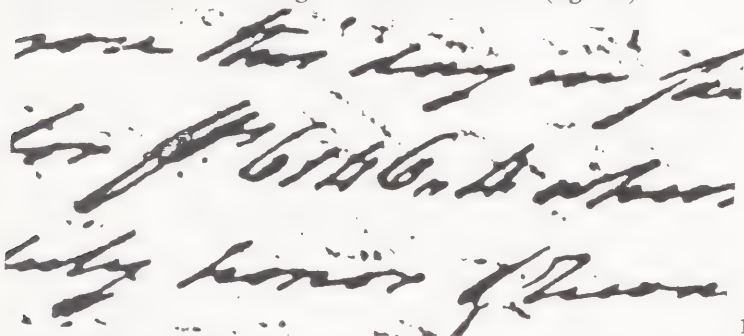
In a September 11, 1778 Pollock letter to George Rogers Clark the \$ sign is used but the letter is written by a Virginia scribe (fig. 11).

[illegible]

During the American Revolution, Oliver Pollock was working in New Orleans (then Spanish Territory) as a secret United States commercial agent. His biographer, James Alton James, infers that Pollock was a developer of the \$ sign.¹¹ Pollock had come to America from Coleraine, Ireland, in 1760, at age 23. Backed by Willing and Morris of Philadelphia, in 1763, he became a ship operating trader headquartered in Havana, Cuba, dealing extensively in rum, coffee, flour, lumber, spices, slaves, etc., with merchants at east coast American ports. He became fluent in Spanish. In 1768 he moved his headquarters to New Orleans and established trade with other Gulf ports and the Mississippi Valley. When Alejandro O'Reilly came to New Orleans on August 17, 1769, in a second Spanish attempt to administer the region, he needed a substantial amount of flour and

Pollock supplied it at normal prices instead of opportunistically increasing his profit by raising prices. This action put Pollock in a favored position for the future there. When the American Revolution began Pollock furnished the Americans with information and supplies and helped to keep Spain cooperating with the Americans.

James, who was familiar with the Fitzpatrick letterbooks, construes Fitzpatrick's \$ signs as transitional rather than a true \$ sign. However the letter dated January 20, 1780, from Pollock to Congress is definitely written by Pollock personally and shows that Pollock himself was using a transitional form (fig. 12).



...the day in Jan
... 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
... honor of ...

12

In a September 18, 1782 letter from Pollock to Congress handwritten by a scribe but signed by Pollock and obviously composed by Pollock, "Dollars" is used after numerals 14 times, "Drs" is used after a number once but nowhere is the \$ sign used. Whether in one distinctive form or another, whether original or a copy, whether by the writer or by a scribe, the important point is that the receiver of any such communication at the time understood what the sender meant by using the \$ sign. Fitzpatrick had already written to Pollock on December 1, 1775, using the \$ sign once and on October 1, 1776, using the \$ sign on 4 occasions. The previously described invoice of April 1, 1778, written by Pollock's clerk, shows fully developed uniform \$ signs. Apparently in 1937, when James's book about Pollock was published, James was unaware of the use of the \$ sign by Ezra L'Hommedieu of New York in 1776 (as disclosed in articles by Cajori in 1913 through 1929), and any claim on behalf of Pollock as the first user of the conventional \$ sign lacks support. Since Fitzpatrick, Pollock and many others had been sending and receiving trade documents and correspondence in great quantity using the \$ sign in recognizable form, they must all be given credit for developing its practicality and its eventual general acceptance.

The \$ Sign Shifts Position

Among the incomplete records of William Constable & Co., a New York trading partnership organized May 10, 1784, there remain some letters written in 1786 addressed to merchants in Philadelphia, West Indies ports and elsewhere which use the \$ sign following the numerals in amounts of money and in no instance in front of the numerals. In 1787 the \$ sign sometimes appears in front of and sometimes following such numerals. By 1789 the \$ sign is always used in front of the numerals. Whether written by scribes or by the principals or both this evolution of the positioning of the \$ sign shows the timing of its change of position by commercial Americans just becoming accustomed to using it. They were going through the same thinking and practices which John Fitzpatrick and others had experienced elsewhere.

The Chalk as a Money of Account

Daniel McGillivray was an independent operator as well as an agent for other firms in trading with native Americans in the East Florida and West Florida areas during the last quarter of the eighteenth century. His wife was a native American of the Creek tribe, enabling him to furnish extensive information to the British, United States and Spanish authorities as to the thinking and practices of the Creeks and other tribes as well as to trade extensively with them in furs and other items. His surviving account book lists prices in "chalks" during the 1788-90 period and when he converts "chalk" totals into dollars and reals he uses the \$ sign. Selected entries are as follows:

58 chalks in goods @ 3 rs ... 21..6

414 chalks reduced to dollars is \$ 155..3

738 chalks reduced to dollars \$ is 276..6

The chalk was equivalent for trading purposes to one pound weight of dressed deerskin which was valued in full weight coin at 3 reals (3/8ths dollar or 37.5 cents). Prices and accounts in trading with the Creek tribe were kept in chalks. This expression was obviously introduced to the Creek and other tribes in the area by English traders who were accustomed to making a tally by chalking one up on a slate or skin or by making tally marks with a stick on the ground. In two of the above entries the English word dollars was first written out and then followed with a \$ sign, showing that the writer was calculating in dollars and reals. He was not using decimal calculations since his parts of a dollar were in reals. It can be noted that the \$ sign is used in two different positions.

The First Printed Dollar Symbol

In the past there has been a broad difference of opinion on the source of the printed form of the true or conventional \$ sign. This has occurred primarily because some printed items had not yet been located and certain historical data as to American type founders had been misapplied.

Lee's *The American Accomptant*, published in 1797, contained the earliest known illustration of a United States coin in its frontispiece.¹² The book proposed five different symbols for monetary amounts to be used for commercial instruction in reckoning in Federal money. These symbols were referred to by the author as "characteristics." The mill was represented by a straight line running on a diagonal from upper right to lower left, being virtually identical with the then existing English symbol for shilling. The symbol for the cent was created by adding another straight line of equal length running on a diagonal parallel with and close to the line representing the mill. For the dime symbol a thick undulating stroke from upper left to lower right was added diagonally across the center of the two parallel lines used as the symbol for the cent, the top end of the undulating stroke pointing vertically upward and the bottom end of the stroke pointing vertically downward.

For the dollar symbol the two parallel lines used for the cent symbol were retained as a base but a complex element from the upper left to the lower right was superimposed across the center of the cent lines in similar placement to the undulating stroke used on the dime symbol. That complex element in the dollar symbol resembles the outline of a short earthworm with its top end pointing vertically upward and its bottom end pointing vertically downward. The designation for Ten Dollars (officially known as an Eagle) was merely the abbreviation E (figs. 13-15).

All of these symbols were used in the calculating exercises in Lee's book after an explanation of them on page 56, but in later pages the dollar symbol is retained and the others are sparsely used. There are altogether 232 uses of the dollar symbol, as many as 8 being found on one page. There is no evidence that any of Lee's symbol system was ever used before or after the publication of his book. Lee's use of multiple symbols seems to have been substantially influenced by the £, s, d, and f, representing the pound, shilling, pence and farthing in the British-style money of account systems used in the American colonies and in Lee's time still used to a great extent in the American states. Although Lee was very enthusiastic about the decimal system he did not take into consideration the fact that

Of Federal Money.

Characteristics.

10 Mills (//)	make	1 Cent.	//
10 Cents - - -		1 Dime.	⌘
10 Dimes - - -		1 Dollar.	⌘
10 Dollars - - -		1 Eagle.*	E.

EXAMPLES.

Reduce 24756 into Mills.

Ans. 24756 Mills

Reduce 24 into Dimes, Cents & Mills

Ans. 240

// 2400

/ 24000

Q. What if any of the middle denominations in the given sum be wanting, as 5 Dollars and 5 Mills?

A. Fill each and all of the vacant denominations with Cyphers; thus \$5.00.5 and then reduce as before.

Q HOW do you subtract Federal Money?

A. The rule of operation and of proof, in this and all the other Federal Tables following, is precisely the same as that of whole numbers, observing only to keep the denominations distinct by the separating Points.

1			2			3		
⌘ // /			⌘ // /			⌘ // /		
From	17	35 5	175	75 0	571	57 4		
Take	15	31 3	142	95 5	523	65 9		
<hr/>			<hr/>			<hr/>		
Rem.	2	14 2						
<hr/>			<hr/>			<hr/>		
4			5			6		
⌘ // /			⌘ // /			⌘ // /		
Err.	43	6 4 3	59	7 4	48	3 3 3		
Paid	37	9 3 7	43	8 3	22	6 6 6		
<hr/>			<hr/>			<hr/>		
Due								
<hr/>			<hr/>			<hr/>		

under decimalization the official U.S. monetary units and the coins minted accordingly would eliminate the need for more than one fundamental monetary symbol accompanying the numerals. Lee's system was thus conceptually obsolete, impractical and very difficult to transcribe.

It is obvious that Lee's monetary symbols were conceived by adding one line or stroke for each larger decimal unit so that the dollar symbol was composed of four separate lines or strokes. His dollar symbol seems to have had no relationship to the handwritten conventional \$ sign which had already been in use by some merchants, bookkeepers and others for as long as 30 years in scattered parts of colonial America and subsequently the United States.

Lee's symbol for the dollar was called to the attention of the numismatic public in *The Numismatist* for September 1899¹³ and generally accepted as the first printed use of the conventional dollar sign until 1925 when Professor Florian Cajori challenged it.

An examination of Lee's symbols, particularly his dollar symbol, shows that they were original with him and that he was not familiar with the existing conventional \$ sign. Such a conclusion is reached by noting that the curving portions of his dollar symbol do not conform to the Roman S in the conventional \$ sign or to the old English long s. The upper end of a Roman S always points either horizontally or downward and not vertically upward as Lee's strokes do. The lower end of a Roman S always points either horizontally or upward and not vertically downward as Lee's strokes do. A Roman S is made with one stroke and not with two separate strokes joining at each end and leaving a long enclosed area between them. The old English long s slopes from upper right to lower left, greatly differing from Lee's two curving strokes sloping in an opposite direction. It seems proper to conclude that Lee would have been pleased to include the conventional \$ sign as his dollar symbol if he had been aware of it. He would have been intellectually dishonest as an instructor and writer if he had known about the conventional \$ sign and had concealed that fact from those he wished to teach. His dollar symbol could not have been a partial modification of the conventional \$ sign because his symbol for the dime resembled the conventional \$ sign more closely than his dollar symbol as Cajori stated. The worm-like element in Lee's dollar symbol cannot be easily handwritten but must be tediously and carefully drawn and spaced to be read and to be distinguishable from his symbol for the dime.

Thus it seems proper to exclude Lee's dollar symbol from being designated as the first printed use of the conventional \$ sign because there is no evidence that either was derived from or influenced by

the other. Granted he was the first to develop a symbol for the dollar in type form rather than spelling out "dollar" or employing an abbreviation, but it appears to be an isolated concept, unrelated to the prior handwritten \$ sign.

The maker of the type for Lee's symbols remains unknown. Christopher Sauer (Sower) began his print shop in 1772 in Germantown, Pennsylvania which was sold to his assistant, Justus Fox in 1784. Fox cast limited styles of type as did Jacob Bey, another assistant who later operated independently. Neither was engaged in that operation by 1797. John Baine from Scotland attempted some typefounding in Philadelphia beginning in 1787 and by 1797 had gone out of business as had Adam Gerard Mappa from Holland who similarly operated in New York beginning in 1790. Henry Lewis Bullen in 1919 had speculated that:

In 1797 Archibald Binny was the only punch cutter in the U.S. and doubtless cut the punches for Dr. Lee's monetary sign. B & R (Binny & Ronaldson) was not satisfied with the sign made for Lee's book. Binny redesigned the character.¹⁴

This statement had no factual support. Binny had come to America from Scotland in 1793 skilled in punch cutting and matrix making for typesetting and set up in Philadelphia in 1796 for the purpose of casting type. His products were uniform and far superior to the symbols used in Lee's book.

Udipe's *Printing Types* (1922) repeated Bullen's 1919 thoughts and stated:

Many of these small equipments finally fell into the hands of two Scotchmen, Archibald Binny and James Ronaldson, whose Philadelphia foundry was begun in 1796. In 1797, they offered for sale the first dollar - marks ever made in type.¹⁵

P.J. Conkwright pointed out in 1955 that this Udipe comment was inaccurate and was apparently copied from 1796-1896 *One Hundred Years, MacKellar, Smiths and Jordan Foundry*, a centennial celebration publication in 1896 of American typefounding by Thomas MacKellar, which stated:

Binny & Ronaldson first began to manufacture the dollar mark in 1797 and under date of November 13, of the same year, it appears on Page 2 of Ledger A for the first time.¹⁶

An examination of that Binny & Ronaldson ledger by Conkwright showed that the dollar mark referred to was handwritten as a ledger

entry and there was no evidence whatever that it was available in type. Certainly the remarks by MacKellar were restated by Bullen and Updike based upon the existence of the dollar symbol in Lee's book. No other use of type for any symbol for the dollar during or prior to 1797 was then or is now known.

The earliest printing which Conkwright had located by 1955 for the use of the conventional \$ sign in type was on January 2, 1802, in the *Aurora*, a Philadelphia newspaper printed by William Duane. This is over four years after Lee's publication. Unfortunately there are no known type foundry specimen sheets containing any \$ sign until E. White & Co. (Elihu White) of New York in 1812 showed a conventional \$ sign for sale on his sheet. Binny & Ronaldson did not list the \$ sign in *A Specimen of Metal Ornaments* (Philadelphia 1809) where the prices were even spelled out as "dollars" nor did they include it in their specimen book of 1812. D. & G. Bruce of New York City offered type for the conventional \$ sign in 1815. Finally James Ronaldson of Philadelphia who had bought out Binny offered 10 different sizes of the conventional \$ sign for sale in 1816 in his specimen sheets. The omission of the conventional \$ sign in a specimen sheet does not indicate that it was not available. Conkwright pointed out that in the foundry equipment of Binny & Ronaldson there actually was a matrix to cast type for the identical \$ sign used beginning in 1802 to print the Philadelphia newspaper *Aurora*. This original copper matrix was retained by American Type Founders' Company and is presently at the National Museum of American History. The recent discovery of the use in 1799 of type from this identical matrix is explained subsequently.

It was also asserted by Conkwright in 1955 that each of Lee's printed dollar symbols differs from the others in size and shape. He also claimed that each piece of type used to print them was separately engraved. It is obvious that they were not cast in type metal from a matrix or they would all be virtually identical. They are crudely done. If each piece of type for the dollar symbol had been separately engraved it would have been a most laborious task and most impractical. The same would have been true for the dime symbol.

An examination of the several type fonts used in setting the general text of Lee's book indicates that the type he used was purchased from London, England, as proven by an examination of the 1788 *Specimen of Printing Types* by Edmund Fry and Co. Fry also had many ornaments and insignia for sale but not any of Lee's money symbols. Wands, as printer of Lee's book, had been in the printing business in Lansingburgh since at least 1792 (Tiffany & Wands was the printer of circulating scrip in 1792 issued by the Lansingburgh

Museum) and it was then customary for American printers to buy their type from European sources. If Wands had obtained the unusual symbols for Lee from a European type founder they would have been uniform but the expense and delay of such a special order would have made it impractical. Thus he seems to have found another way to create them.

The handwritten entries in the 1797-1801 ledgers of Binny & Ronaldson list 144 different customers for type throughout the United States and William W. Wands is not among them.

There are 232 dollar insignia in the Wands printing of Lee's 312 page book. The size is duodecimo (about 7" \times 4"). It would have been customary for some of the type for the dollar insignia and other unique insignia to be reused just as other type would have been reused in setting a book printed in parts. The printed collation or signature marks used on the pages to guide the binder in the signature assembly of Lee's book are alternatively every 4 and 8 pages (A followed by A1; B followed by B1; etc.), making it clear that 12 pages were first printed in one impression on a single sheet. When that sheet was rotated 180 degrees on its central axis, another impression would be made on the other side so that there would be two identical sets of 12 pages on the sheet. This sheet was cut in half and each half cut into unequal parts for customary folding into 4 and 8 page alternating sections. Thus when the scheduled number of a sheet impression was printed, the type could be released and reused in setting further text. The maximum number of dollar insignia in any 12 page impression was 20 (pages 228 through 240) and if reused no more were required. If type for another 12 page impression was being set while the prior 12 page make-up was in press, then more type would have had to be on hand. The question left unanswered is how 20 or more different pieces of type for the dollar insignia and a lesser number of different pieces for the dime insignia were prepared in a way which resulted in all of them being somewhat different. The special insignia could have been cast in molds which often broke after each lead pouring. This might be true of clay or plaster molds which still retained some moisture after drying and usually cracked from the heat of the hot type metal. This was the problem Benjamin Franklin had encountered in inventing nature printing in 1737 and by William Ged of Edinburgh, Scotland, in trying to perfect stereotyping in 1739.

If each soft mold had been formed with one punch carved out of wood or lead the resulting cast insignia would be generally uniform. If each soft mold would have been formed with the use of more than one punch, variances would occur. Pieces of cast type

on hand could have been modified to make two or more punches for the different parts of Lee's dollar insignia. The use of available cast type would also give a standard depth to any such impression in clay or plaster.

A possibility for such punches is the modification of the section mark (§) which has a worm-like central portion with pointed or rounded ends and curled tails at the top and bottom. It was routinely sold by English typesetters to American printers during the eighteenth century. In addition to its normal use it was also used for borders and decorations. Paper money printed on behalf of American colonies and independent states such as Virginia, North Carolina and Maryland has many such marks, the 15 shilling and £3 denominations of the North Carolina issue of April 23, 1761, each having a total of 83 of such § marks divided into two sizes. The tails and other portions of the section marks could easily have been cut off or filed off such cast type to form one or more punches to be used to form the worm-like portion of Lee's dollar insignia. Then an additional piece of cast type containing a line or parallel lines could be used diagonally so as to form the balance of Lee's dollar insignia in the soft mold. A number of such molds could be made at one time prior to drying and pouring or could have been made as needed depending upon mold fracturing. Wands as printer could have undertaken a project of this nature in his shop.

While it may be unscientific to speculate on what caused the individual differences in the dollar and other monetary insignia used in Lee's book, the omission of such suggested possibilities might be neglectful. Further findings in this regard can hopefully be anticipated.

The First Printed Conventional \$ Sign

In a pamphlet entitled *Facts Respecting the Bank of North America*,¹⁷ there are 14 printed conventional \$ signs in identical form and followed by numerals. This eight-page pamphlet is undated and without an indicated author. The \$ sign has two very close diagonal parallel strokes tilting from upper right to lower left across a well-formed S (fig. 16). The date of the printing of the pamphlet must be determined from its content.

The Pennsylvania charter of the reincorporated Bank of North America was to expire on March 17, 1801, unless further extended by a Pennsylvania enactment. The text of the pamphlet covers the history of the Bank of North America, describing its patriotic assistance to the Federal government and its loans to the State of

necessary sum was not subscribed until December, 1781; and, even at that late period, the actual amount of monies paid in by individual Subscribers did not exceed \$ 85,000. In order to encourage the Bank, the Superintendant of Finance subscribed, on account of the United States, for Stock to the amount of \$ 250,000; but the Finances were so much exhausted, that, in the December following, the Bank was obliged to release the United States from their subscription, to the amount of \$ 200,000; the remaining \$ 50,000 having been sold, by the Superintendant, to some persons in Holland.

16

Pennsylvania in 1782, 1791 and 1792. The pamphlet states that there is no reason for the dissolution of the Bank and that "it may not be improper to make some observations on the application for a renewal of the charter" and "when the Legislature is informed of these services and of the great number of citizens interested in the institution, it is hoped they will grant a renewal of the charter"

The records show that the initial motion to extend the Bank's charter was submitted to the Pennsylvania House of Representatives in Philadelphia on February 5, 1799. Legislation to extend the charter for 14 additional years was fully enacted and approved by March 20, 1799. The pamphlet would only have been useful if printed between those dates. It would not have been printed earlier because it refers to the "application" for renewal of the charter.

The pamphlet was separately printed in Harrisburg, Pennsylvania by John Wyeth, and in Lancaster, Pennsylvania by William Dickson (Dixon). The text is exactly the same in each. The type used in each pamphlet was set independently from completely different type fonts except for the \$ signs which were type cast from a single or identical brass matrix. Wyeth capitalizes the first "A" of America in "Bank of North America", while Dickson uses a hyphen after "North" and a lower case "a" in "america." The pamphlets show some variances in line breaks. No other printings of this pamphlet are known, particularly none were from Philadelphia.

There must have been a good reason for these two virtually identical printings. The Philadelphia business interests were naturally in favor of the Bank continuing. The affirmative vote of the rural legislators was needed for passage. John Wyeth published a newspaper (*The Oracle of Dauphin*) in Harrisburg and had distribution capabilities in that part of the state. William Dickson, a political-

ly active printer in Lancaster (which was about to become the new capital of Pennsylvania), had a different range of contacts. Each printer would therefore be able to reach different groups. It would not be politically tactful to ask either printer to distribute something printed by another printer. The removal of the capital of the State of Pennsylvania from Philadelphia to Lancaster was then under consideration and was approved in Philadelphia on April 4, 1799. The first legislative session in Lancaster took place on November 5, 1799. This indicated the political importance of Dickson's selection for printing the pamphlets he distributed.

The fact that identical well formed \$ signs are found in each printing points to the nearby type foundry, Binny & Ronaldson, of Philadelphia, whose steel punched brass matrix of that identical \$ sign still exists. This is further confirmed by handwritten Binny & Ronaldson ledger entries of the 1796-1801 period where both Wyeth and Dixon are separately listed as customers. No Philadelphia newspaper or other American publication appears to have used any \$ sign in print prior to the 1799 pamphlets, so that date of February 1799 may be accepted as the first printed use of a conventional \$ sign until new facts may show otherwise.

The earliest use of the Binny & Ronaldson \$ sign heretofore pointed out by others has been in the Philadelphia newspaper *Aurora*, for January 2, 1802, on page 2, column 5. In a further perusal of that newspaper, it is found that the \$ sign was first used in the issue of December 18, 1801, in three instances (fig. 17). In

NEW ORLEANS.

Cotton per cwt. 28 dollars ; tobacco, per
do. 4 dollars ; bar iron per do. 25 dollars ;
bacon per do. 12 dollars 50 cents ; salted
pork per barrel 14 dollars ; flour per do.
10 dollars ; whiskey per gallon, 75 cents ;
peach brandy per do. 1 dollar 50 cents ;
corn unshell'd per bushel 1 dollar.

Prices at Havanna, 32 days since.

Lumber, \$34 ; pork \$ 30 ; beef 20 a
28 ; other provisions plenty—flour \$ 9 ; 17
molasses and sugar scarce.

the *Aurora* for January 2, 1802, there was a U.S. Treasury report containing "dollars" spelled out 38 times and the \$ sign was used only 2 times. There was no shortage of \$ sign type because 22 such

2,982	perch.	Lock chamber in com-		
		mon stone <i>a</i> 3 $\frac{1}{4}$ %	£	10,262
1,579	do.	Above in ashler <i>a</i> 5	£	7,895
2,240	do.	Gate and sluice walls to		
		upper locks, <i>a</i> 4	£	8,960
1,579	do.	Lock chamber below		
		high water, <i>a</i> 3 $\frac{1}{4}$ %	£	5,226
				18

insignia were used in the January 7, 1802 *Aurora* issue (fig. 18). All of these \$ signs are identical to the \$ sign used in *Facts Respecting the Bank of North America*. William Duane, printer of the *Aurora*, is also on the customer list of Binny & Ronaldson. On November 13, 1802, the same \$ sign was used in *The Gazette of the United States* (Philadelphia) and in the *New York Herald* of June 1802, for lottery prizes. All of these are type from the Binny & Ronaldson matrix.

It seems very curious that the casting of type for printing the \$ sign in 1799 took place before any special type for printing the English £ sign had been cast anywhere, even though the £ sign had been used in printing in Great Britain and elsewhere long beforehand. The printing of the £ sign had been accomplished by inverting a Janson style J as shown in fig. 19. This inversion can be observed on the 1757 paper money printed in and issued by the colonies of North Carolina and Virginia from Janson type imported from Britain.

This is an example of a type called *Janson* and this is how the *J* can be turned upside down to make a pound sign: £25 15s 6d 19

Governmental Use of the \$ Sign on Money and Loans

When the Spanish dollar was adopted as a monetary unit for paper money issues of the Colony of Maryland in 1767, by the Continental Congress in 1775, and by most of the individual States during the Revolutionary War and Confederation period, there were no \$ signs used on the currency. The dollar monetary unit was always expressed in lettering reading DOLLAR(S) or an abbreviation of it, whether type set, engraved into a printing plate or in a cut or block inserted into a printing form. No dollar coinage was issued by any of those governments prior to the adoption of the U.S. Constitution in 1789 except the pattern or trial strikings of 1776 Continen-

tal Currency Coinage of one dollar which did not have any denomination or monetary unit in its legends and the 1783 Nova Constellatio silver pattern of Robert Morris which had 1000 mills or units as its denomination. Massachusetts in 1787 and 1788 struck copper cents and half cents, but these denominations used the word CENT and had no reason to refer to the dollar.

The official loan documents of the Continental Congress and the individual states for the period of the American Revolution and until the adoption of the U.S. Constitution were sometimes in dollars or Spanish dollars and whether handwritten, typeset, or engraved none have been located which contain a printed or handwritten \$ sign. In such obligations and documents the amount was customarily in handwritten form in the text and was often duplicated elsewhere on the document in numerical form for convenience.

In a January 20, 1791 typeset printed receipt form of the U.S. Commissioner of Loans in Boston, the amount of the obligation in the primary text is filled in with handwritten numerals without any designation of dollars or cents other than a handwritten dash between them. There is a typeset combining symbol printed as an alteration protector to the left of the space for the handwritten numbers. When the numbers are totalled below in handwritten numerals within printed horizontal lines the word "Dollars" is printed well to the left of the handwritten numerals and no alteration protection symbol is used (fig. 20).

Annum from the first day of January 1791,
not exceeding in one year the Proportion of } 2858-20
l and Interest.

rst day of January 1801, and subject to be } 1429-10

r Annum, from the first day of January 1791, } 1284-25
of the United States.

Dollars

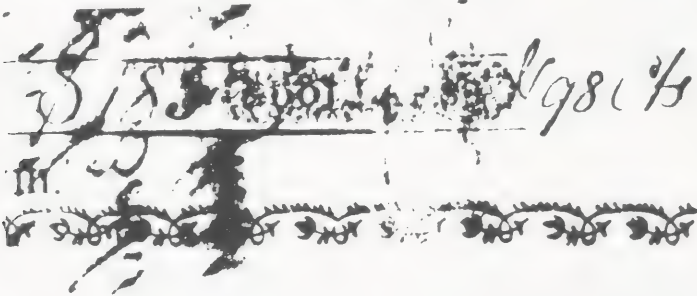
5571-55

and five hundred & seventy one

20

The earliest use located for the \$ sign on an American governmental obligation is found on a partially engraved, partially typeset and partially handwritten United States Loan Office certificate issued January 17, 1792 to "George Washington of Fairfax County,

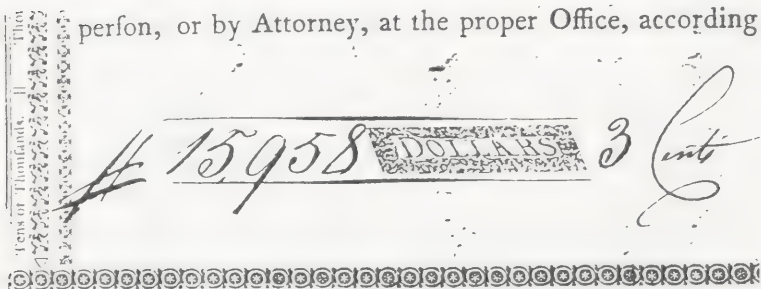
Virginia" in the amount of "One Hundred & Eighty five dollars & Ninety eight cents Assumed Debt." The quoted portions are handwritten. In the lower left corner the amount is repeated in handwriting as "\$ 185" followed first by "Dollars" printed from an engraved block and then by a handwritten "& 98 Cts." The \$ sign is written with a single upright (fig. 21).



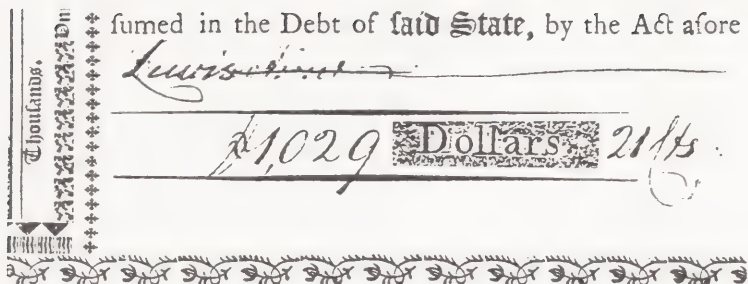
21

Most subsequent United States Loan Office certificates, where the amount is required to be written in, also have a repetition of the amount in written numerical form in the lower left corner with the word DOLLARS printed in an engraved ornamental frame. When the amount is handwritten to the left of the ornamental frame, an alteration protector is often used—one to the left of the numerals to protect that side and sometimes one to the right of the word DOLLARS so an amount in cents cannot be added. These alteration protector marks are usually a handwritten "#" (the symbol for number or pound weight) or a dash or one or more crosses or curves. The \$ sign usage in this context was minimal because DOLLARS was already printed on the form (figs. 22-24).

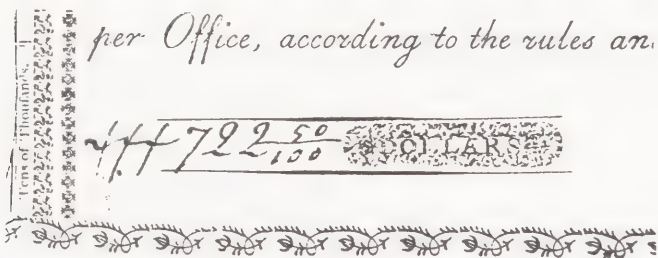
22



perfon, or by Attorney, at the proper Office, according



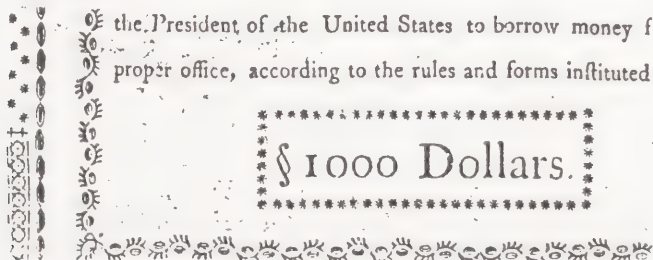
23



24

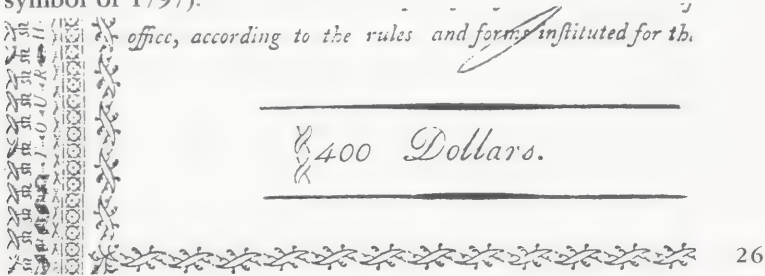
Continuing into the first decade of the nineteenth century, the United States obligations authorized by the various Acts of Congress were in similar form but for convenience, pursuant to certain authorizations, specific denominations were printed on the obligation document and not filled in by hand. In such case the amount and the word DOLLARS were printed in typeset letters, but in the lower left corner area, typeset numerals were used, DOLLARS spelled out in typeset letters, and a typeset alteration protector printed in front of the numerals.

In an August 27, 1800 obligation for "1000 Dollars," the alteration protector in the lower left corner is a typeset "\$" or section sign (fig. 25).

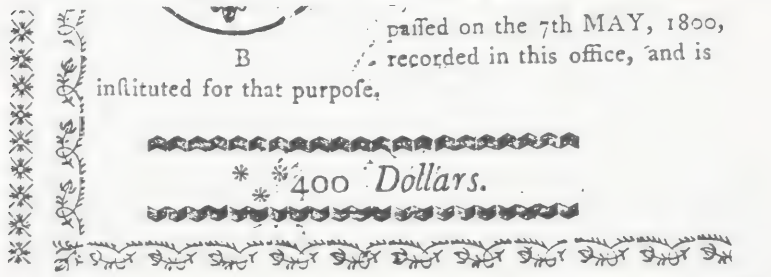


25

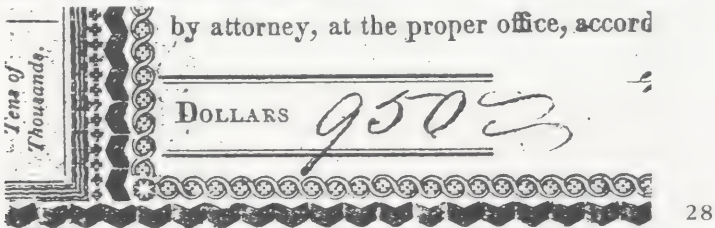
In a January 11, 1805 obligation for "400 Dollars," the protector consists of two identical typeset ornaments, each with a worm-like form slanting down to the left and an interrupted diagonal line slanting down to the right (fig. 26; this ornament somewhat resembles in mirror image an element in the Chauncey Lee dollar symbol of 1797).



In a May 13, 1806 obligation for "400 Dollars," the alteration protector consists of three typeset 8 pointed star-like ornaments as points of a triangle known in printing as an asterism (fig. 27).



For the 1813 U.S. Loan, the lower left corner of the obligation has the word DOLLARS in typeset letters moved to the left of the space to be filled in by handwritten numerals. By this action the right end of the numerals required alteration protection by writing in some mark by hand (fig. 28).



This practice continued for more than another decade even though check writing, invoicing, accounting records and private obligations had solved this alteration problem with a \$ sign to the left and a fraction line or punctuation to the right of the written dollar numerals.

The various typeset styles and ornament placements on U.S. fiscal obligations, at a time when type for the \$ sign was readily available beginning in 1799, indicates that there was a reluctance to accept the \$ sign on formal or official documents. It was not until U.S. obligations were privately designed and printed by Rawdon, Wright & Hatch from fully engraved plates under the Act of October 12, 1837, that the use of the printed \$ sign on some of the formal U. S. obligations was commenced and continued at convenience.

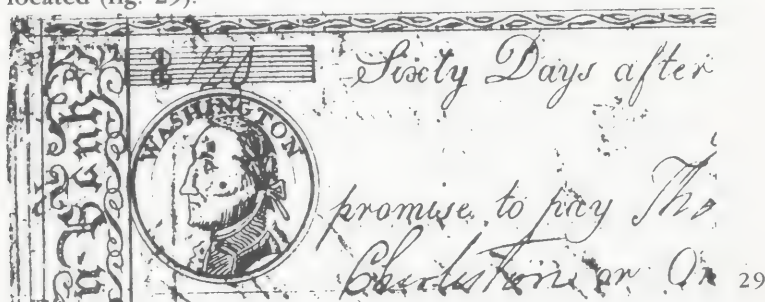
At the commencement of the Civil War, in addition to issuing bonds, the Union authorized and issued interest bearing, circulating notes of appropriate size and denomination. A design submitted for the back of an 1861 Interest Bearing Note of 500 dollars contained a warning that the fine for counterfeiting was "\$1000" in addition to confinement. In due course the Union issued various types of non-interest bearing paper money for circulation and when a counterfeit warning was placed on some National Bank Notes in 1863, the \$ sign was similarly applied. Beginning in 1869, many Legal Tender or United States Notes had a \$ sign in the counterfeit warning.

The use of the \$ sign on the back of the Compound Interest Notes of 1863, etc., was used as part of the total amount of interest payable. The \$ sign then spread to coupons as a space saver. The first instance of a \$ sign as a major element in the design of circulating Federal currency is on some of the Coin Notes of the Series of 1890 and 1891.

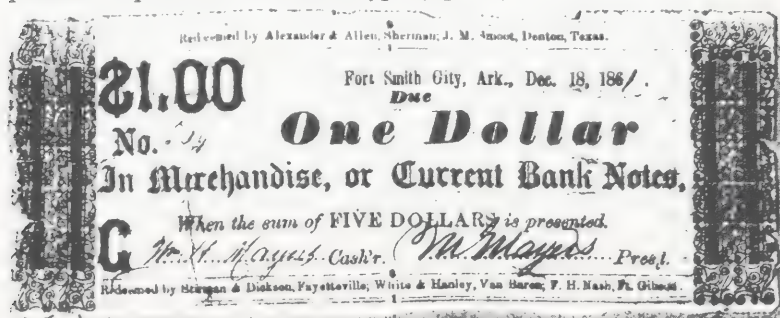
However a decorative emblem of a capital S superimposed on the right upright of a capital U was extensively used on federally authorized paper money beginning in the Civil War period and continuing into the twentieth century. That emblem does not resemble a \$ sign but if its S portion had been centered over both uprights of the U it would have appeared similar. The emblem is merely an artistic "U S" insignia. It is found 15 times on the 1875 series \$20 U.S. Note and a lesser number of times on other denominations. It is used either on the face or back or both. It is found on various issues and denominations of Interest Bearing Treasury Notes, Compound Interest Notes, Legal Tender or U.S. Notes, Coin Notes, Silver Certificates, Gold Certificates, and National Bank Notes. It seems to have developed independently as a design element without any influence from the prior existence of the conventional \$ sign.

Other Early Printed \$ Sign Uses

W. Stillman engraved a promissory note form for the Washington Bank in Westerly, Rhode Island. It is hand dated July 14, 1803. Apparently through inexperience, the engraver created a mirror image \$ sign but each S is properly cut into the engraved plate. Nevertheless that \$ sign is the earliest engraved \$ sign which has been located (fig. 29).



The mirror image of a large \$ sign again evidenced itself during the Civil War when M. Mayers & Bro., druggists at Fort Smith, Arkansas, put into circulation \$1 scrip notes dated December 18, 1861, printed in part from wooden type (fig. 30).



In the Harrisburg, Pennsylvania newspaper *Oracle of Dauphin*, for January 17, 1807, there are four methods of presenting monetary units for prices, (1) only an indicator for cents, (2) a \$ sign, (3) the abbreviations of dls and dl, and (4) no monetary indicator at all, each method being aided by appropriate spacing between the numerals for dollars and the numerals for cents (fig. 31).

Belmour, a novel, 2 vols. 2 25cts.
Betham's Biographical Dictionary of celebrated women of every age and country, \$ 2 50
Life of Erasmus. . . 6 dls.
Goldsmith's Essays, 2 vols. 1 dl. 50 cents.
Scott's Dissertations, essays and parellels, 2 33

31

There was a slow introduction of the conventional \$ sign in books, possibly fearing a hesitant public acceptance. The first edition (1801) of *The Scholar's Arithmetic or Federal Accountant*, devoted pages 87 through 97 to explanations and calculations involving Federal money.¹⁸ When the text mentioned U.S. dollars they were referred to either as "Dollars" or "Dolls," capitalized or uncapitalized. This was also true in 1802 for the second edition. However in the third edition of that book published in 1805 in Leominster, Massachusetts, and thereafter until the final edition in 1833, the conventional \$ sign was used extensively, particularly when amounts were tabulated or totalled. In 1808, other American reckoners, almanacs, instructional books and manuals on arithmetic, accounting and business calculations also began to use the \$ sign, always trailing by several years the use of the printed \$ sign in newspapers and other more informal documents.¹⁹

Elements of Arithmetic, published in 1823, seems to be the earliest book in the Louisiana Purchase portion of the United States using the printed \$ sign routinely in applicable calculations.²⁰

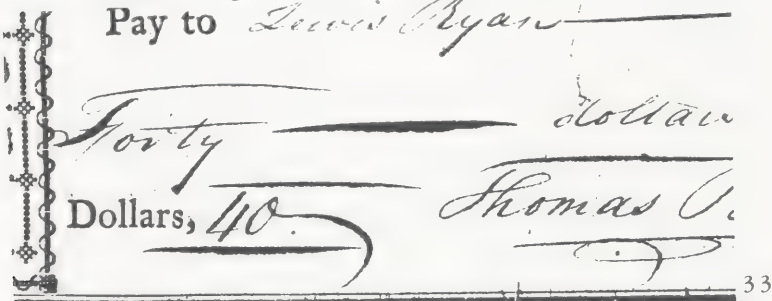
The use of the \$ sign on printed checks slowly developed as people recognized the advantage of using the \$ sign as an alteration pro-

NORTH-AMERICA (decorative border)	CASHIER of the BANK.	
	Pay to	<i>Myself</i> <i>and to</i>
	<i>Eight</i>	Dollars
	DOLL. <i>20</i> <i>90</i>	(

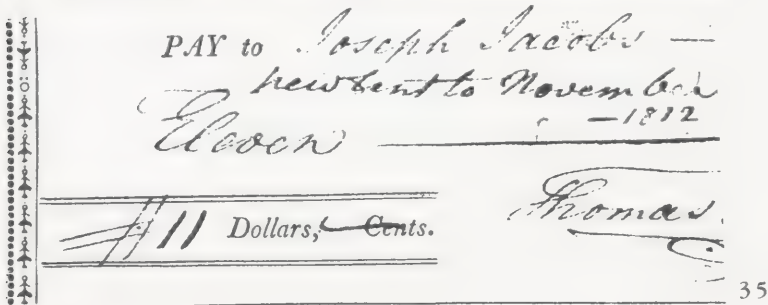
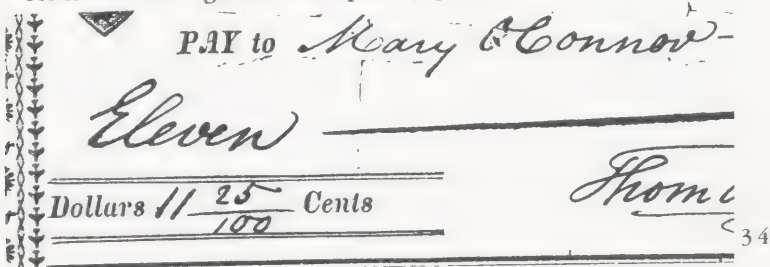
32

terior on the left side of a number. In the late eighteenth century, there was no such protection and either Doll, Dolls or Dollars were customarily printed on checks in a position so that numerals could be written in on the left and a fraction bar printed on the right (fig. 32)

On the early nineteenth century checks, the word "Dollars" was often printed at the left end so that the written numerals could be written in to the right of "Dollars" (fig. 33).

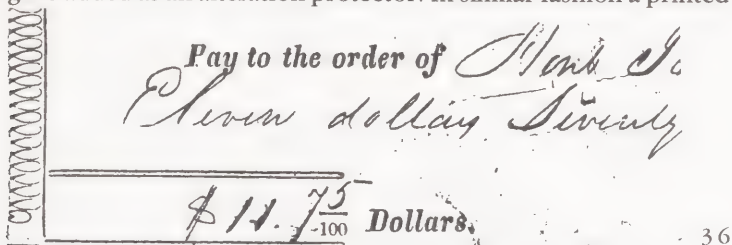


This was then changed by printing "Dollars" on the left, leaving a modest space to the right for written numerals and printing "cents" to the right of that space (fig. 34).

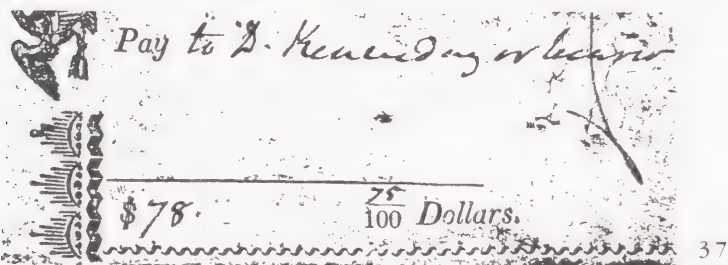


In an alternate form, "Dollars" was printed so that numerals could be written in to its left and a space followed by the printed word "cents" on the right of "Dollars" (fig. 35).

Sometimes a fraction bar with "100" underneath it was printed followed by "Dollars" in print so that the numerals for dollars could be written to the left and the numerals for cents written over the bar of the printed items. Fig. 36 illustrates a check where a written \$ sign is added as an alteration protector. In similar fashion a printed



36



37

\$ sign was added to the left of the space for the numerals (fig. 37).

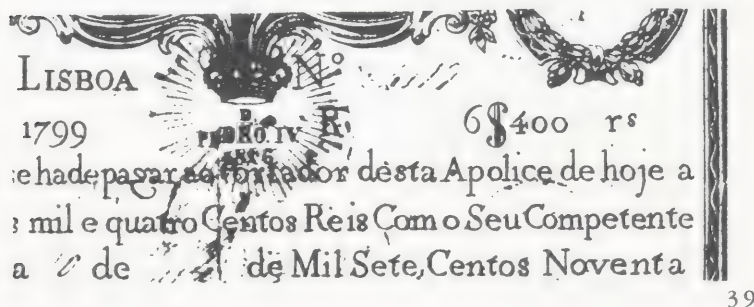
These were the early forms of checks which gave rise to the need to use the \$ sign in expressing a monetary amount in a concise and protective manner.

The Portuguese \$

When Portuguese inflation resulted in the circulation of high denomination bank notes beginning in 1797, that issue of paper money contained a \$ as a symbol. In order to make the denominations of the engraved currency easier for the public to read, the \$ was placed between the numerals constituting thousands and the numerals less than one thousand. For example 10,000 reis was printed as 10\$000 rs and 2,400 reis was printed as 2\$400 reis (figs. 38-39). This practice was continued on some Portuguese and Brazilian paper money during the nineteenth century when denominations were in multiples of milreis (1000 reis).



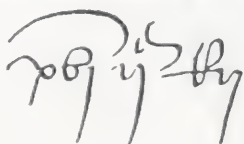
38



39

When in the eighth century Arabs moved westward across North Africa into the Iberian peninsula, they introduced their use of a zero in numbering. This was a symbol which Roman numerals did not include. This zero was called sifir in Arabic and cifra in Spanish and Portuguese. It was a representation of a mathematical concept or a code just as were other Arabic and Roman symbols for numbers and gave rise to the English word "cipher" which is understood as meaning number as well as code.

When Roman numerals were used to write a large number there often was a signal to represent thousand and this was a very wide M (the Roman letter representing 1000) or a convex arc which was written over the top of the Roman letter symbols which denoted the number of thousands (fig. 40). The Arabs simplified this indicator



40. Portugal, 16,252 (1497)

for writing both Roman and Arabic numbers by placing a long armed U between the symbols or numerals for one or more thousands and those for less than one thousand (figs. 41-42). This long armed U was stylistically written with flourishes so that by the beginning of the eighteenth century in Portugal, it appeared as a U with arms curving inward, over which a crossbar was sometimes added to distinguish it as a symbol (fig. 43).

41. Castile, Spain
64,454 (1493)

42. Lisbon (1554)

43. Lisbon (1709)

44. Portugal (1711)

Lisbon (1761)

As its convenience further developed, the rounded U was improved by being divided into three parts by inscribing two close parallel lines across it running from upper right to lower left. Thus the rounded U was divided into three sections, one representing each of the three numerals which were necessary to reach the thousand plateau (fig. 44).

This aggrandizement or enlargement of the cifra or symbol for thousand was then referred to in Portuguese as *cifrão* (phonetically *cifron*) in accordance with the common Portuguese practice to add a suffix in this manner to aggrandize the expression. After the middle of the eighteenth century, some stylistic modifications to the rounded portion of the *cifrão* took place so that it appeared more like an S than a modified U. The two parallel lines in the *cifrão* were changed to a more nearly upright position. No items printed in Portuguese have been located which bear the *cifrão* \$ symbol prior to the year 1797 when the \$ symbol was engraved into the plates for printing Portuguese bank notes previously described.

The Portuguese kept the *cifrão* in common usage as a symbol for thousand throughout the nineteenth century in both Portugal and Brazil, but occasionally the style changed when the S portion sometimes became topless, being a throw back to its origin as a rounded U (figs. 45-47).



45. Vertical lines project (1888)



46. Vertical lines confined (1887)



47. Topless (1867-69)

An abrupt change in the meaning of the Portuguese \$ symbol or *cifrão* occurred when a Portuguese decree of May 22, 1911, and the law of June 21, 1913, provided that the \$ or *cifrão* no longer represented 1000 in monetary matters but thereafter was to represent a newly revived monetary unit, the Escudo. The Escudo was divided into 100 centavos. The newly defined \$ symbol was placed between the number of Escudos and the number of centavos for monetary convenience, with the numerals to the left of the symbol representing Escudos and two numerals to the right representing the number of centavos. The new \$ was also usable on the left end of the numbers and a punctuation mark or space used as a separator from centavos. These uses are evident on some twentieth century issues of Portuguese paper money (figs. 48-49).



48. (1920)



49. (1922)

Thus the Portuguese *cifrão* or \$ symbol seems to have developed quite independently and for its entire lifetime has had an entirely separate meaning and interpretation from that of the conventional \$ sign for dollar. No evidence has as yet come to our attention by which the Portuguese *cifrão* \$ symbol influenced the conventional \$ sign for dollar or vice versa.

The World Adopts the \$ Sign

Those in the English speaking areas of Spanish regions in America would have little reason to believe that their form of \$ sign would spread throughout the world (fig. 50). Their \$ sign evolved to represent the United States dollar. Their \$ sign was adopted by many nations which used the peso. Their \$ sign was chosen to represent the dollar or other monetary unit of nations throughout the world including Australia, Bahamas, Barbados, Belize, Brazil, Canada, Cayman Islands, Chile, China, Columbia, Cuba, Dominica, Ethiopia, Guiana, Honduras, Hong Kong, Jamaica, Liberia, Malaysia, Mexico, New Zealand, Nicaragua, Peru, Philippines, Singapore, Taiwan, Trinidad, Uruguay and Vietnam.²¹



¹ The amount of enthusiastic and excellent cooperation I have received from others for this study is far in excess of assistance I have received in prior research. I needed it. My utmost thanks go to Elizabeth M. Nuxoll as Project Editor of *The Papers of Robert Morris*, Phil Lapsansky of the Library Company of Philadelphia, and Margaret Fisher Dalrymple as author of *The Letterbooks of John Fitzpatrick 1768-1790*. To Leslie Elam as Director of the American Numismatic Society for his constant help and encouragement, I am most appreciative. I am grateful to Thomas Serfass for preparing endless revisions and making suggestions for clarity. The many others who have been of assistance include American Antiquarian Society, William G. Anderson of Suffolk Community College, Robert R. Archibald of Missouri Historical Society, Philip M. Arnold, Bank of Portugal, Francis Campbell of the ANS, John Catanzariti, Joanne Chaison of the AAS, William Coker, Light T. Cummins, Richard Doty of the National Museum of American History, SI, Eric P. Newman Numismatic Education Society, Robin Fabel, Mary A. Y. Gallagher, Alan Graham of the Louisiana Archives, John Herzog of the Museum of American Financial History, Ruth W. Hill, John N. Hoover of St. Louis Mercantile Library, Clyde Hubbard, Kay M. Kramer, Jeremy Killie, John M. Kleeberg of the ANS, Lancaster County Historical Society, Joseph R. Lasser, Jose Lima, Anne S. Lipscomb of the Mississippi Department of Archives and History, William Metcalf of the ANS, Clifford Mishler, James Mosley of St. Bride Printing Library, Philip L. Mossman, Stan Nelson of the National Museum of American History, Joao Candido de Lima Neto, Evelyn E. Newman, Randall Pope of Washington University, Jennie Rathbun and Kathleen Donovan of Harvard University Libraries, Robert G. Sayer, Neil Shafer, Bruce W. Smith and Raymond H. Williamson.

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- ⁴ Florian Cajori, "The Evolution of the Dollar Mark," *The Popular Science Monthly* 1912, pp. 521-30.
- ⁵ Chauncey Lee, *The American Accomptant* (Lansingburgh, NY, 1797).
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- ⁷ Florian Cajori in *School and Society*, vol. 21 (May 23, 1925), p. 625.
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- ⁹ Margaret F. Dalrymple, *The Merchant of Manchac: The Letterbooks of John Fitzpatrick, 1768-1790* (Baton Rouge, 1978).
- ¹⁰ "Oliver Pollock Letters," *Papers of the Continental Congress*, Item 50, National Archives.
- ¹¹ James A. James, *Oliver Pollock, The Life and Times of an Unknown Patriot* (New York, 1937).
- ¹² Lee (above, n. 5); the printer and publisher was William W. Wands in Lansingburgh (now Troy), New York.
- ¹³ "The Origin of the Dollar Sign," *The Numismatist* 1899, pp. 203-4.
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- ¹⁶ P.J. Conkwright, "Binny & Ronaldson's \$ Sign," *Printing and Graphic Arts Magazine*, vol. 3 (1955), pp. 59-61.
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- ¹⁸ Daniel Adams, *The Scholar's Arithmetic or Federal Accountant* (Keene, NH, 1801).
- ¹⁹ Solomon Parker's *Parker's American Citizens Sure Guide or Ready Reckoner, Measure and Calendar* (Sag Harbor, NY, 1808), p. 231, contains only a single \$ sign and Samuel Webber's second edition of *Mathematics* (Cambridge, MA, 1808), uses \$ signs to some extent.

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